



MINERVA

EP4904 M.2 PCIe 5.0 with ReDriver for ARF6-16

Performance & Burn In Test Rev. 1. 0

Table of Contents

1. Overview
2. Performance Measurement Tools and Results
 - 2.1 Test Platform
 - 2.2 Test target and M.2 NVMe SSD
 - 2.3 Install Hardware
 - 2.4 BIOS & Windows 10 OS environment setup
 - 2.5 CrystalDiskMark 8.0 x64 performance test
 - 2.6 AS SSD Benchmark 2.0.7 performance test
 - 2.7 ATTO Disk Benchamrk 4.0.1 performance test
 - 2.8 AnvilBenchmark_V110_B337 Benchmark performance test
3. Burn In Tests and Results
 - 3.1 BurnInTest v10.2 Pro burn in test
4. Summary

EP4904 Host Bus Adapter

1. Overview

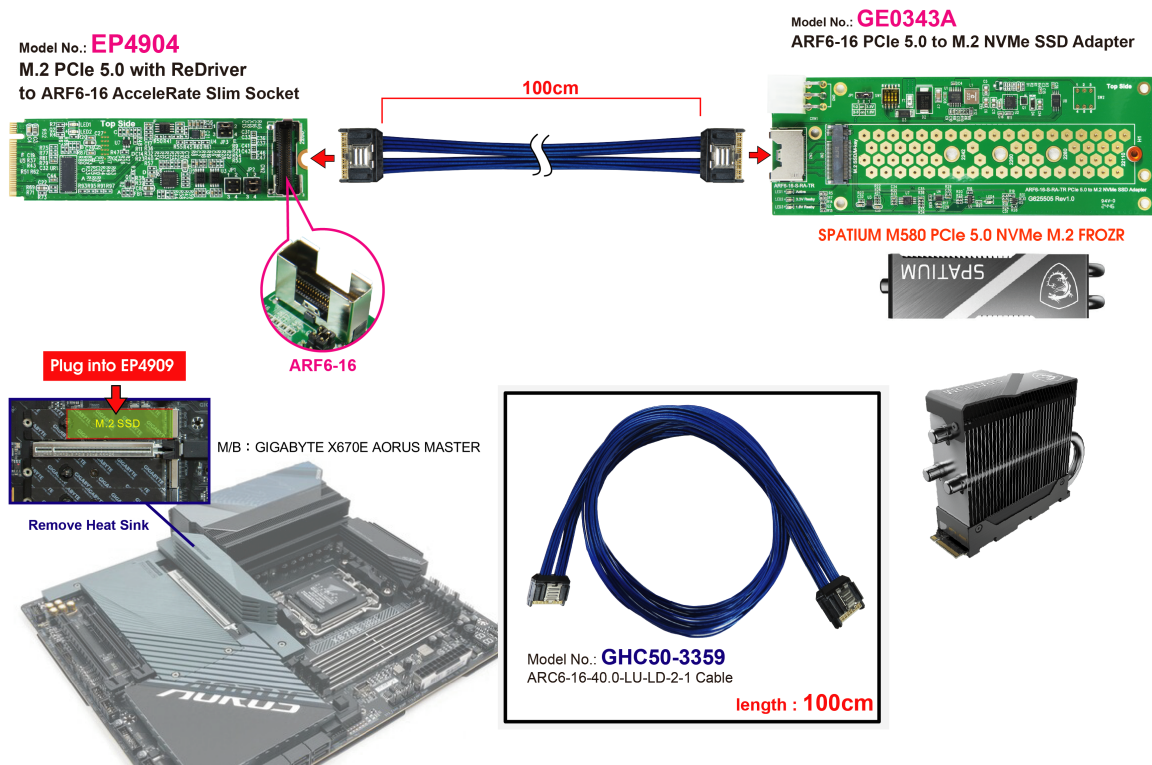
The M.2 Host Bus Adapter may implement PCIe 5.0 4-Lane, 32GT/s high-speed signals extension, built-in ReDriver controller to provides equalization up to **24 dB at 16 GHz** to ARF6-16 connector.

2. Tools and Results of Performance Measurement

2.1 Test Platform:

M/B : GIGABYTE **X670E AORUS MASTER**
CPU : AMD **Ryzen 5, 7600X 6-Core**
Memory : Kingston **KF556C36BBEK2, DDR5-5600MT/s, 64GB**(32GB DIMM*2)
ATX Power : Apexgaming AN-550, **550W ATX**, 12V V2.2 Power Supply
AIC: EP4904 M.2 PCIe 5.0 with Redriver to ARF6-16 adapter
Cable: SAMTAC ARC6-16-40.0-LU-LD-2-1, **100cm** cable
Adapter: GE0343A ARF6-16 to M.2 with Hot Plug Power protection adapter
OS : Microsoft **Windows 11 64bit OS**

2.2 Test target: EP4904 AIC, GE0343A Adapter & MSI M580 **2TB** PCIe 5.0 M.2 NVMe SSD



EP4904 Host Bus Adapter

2.3 Install Hardware

Inserts M.2 NVMe SSD into GE0343A adapter converter's M.2 M-key connector, and then with coppers, and screws to fix SSDs. (Please refer to the Installation Notes). Connects GE0343A converter to EP4904 adapter(M.2 PCIe 5.0 with Redriver to ARF-6-16 Adapter), Using SAMTAC ARC6-16-40.0-LU-LD-2-1, 100cm cable and plugs EP4904 into M.2 PCIe 5.0 connector of GIGABYTE **X670E AORUS MASTER**

2.4 BIOS & Windows 11 OS environment setup

- 2.4.1 Primary SATA SSD installed Windows 11 OS.
- 2.4.2 M.2 NVMe SSD, formatted to NTFS Mode. Don't install any program.

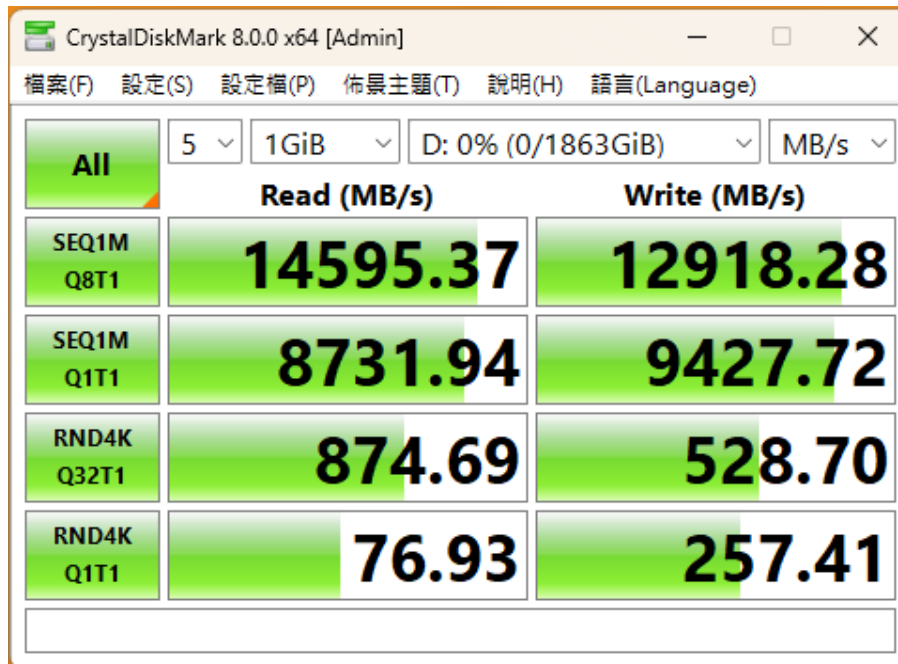


EP4904 Host Bus Adapter

2.5 CrystalDiskMark 8.0 x64 performance test

※Benchmark (Sequential **Read & Write** / default = **1MB**)

2.5.1 MSI M.2 NVMe SSD/ 2TB performance as below:



CrystalDiskMark 8.0.0 x64 [Admin]

檔案(F) 設定(S) 設定檔(P) 佈景主題(T) 說明(H) 語言(Language)

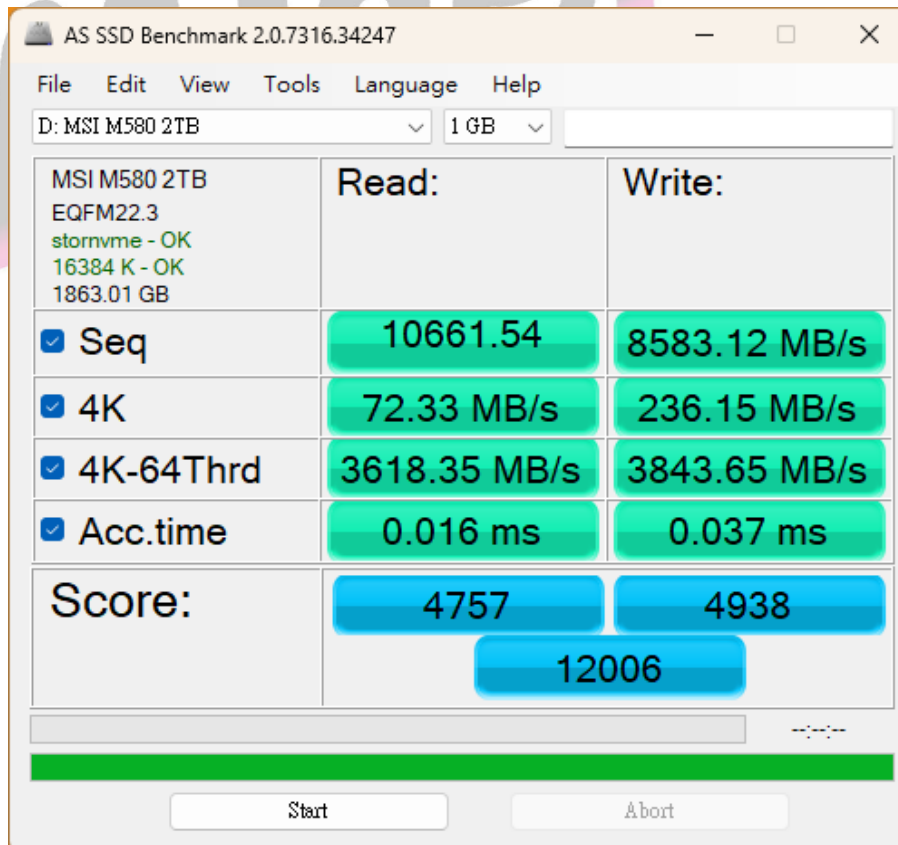
All 5 1GiB D: 0% (0/1863GiB) MB/s

	Read (MB/s)	Write (MB/s)
SEQ1M Q8T1	14595.37	12918.28
SEQ1M Q1T1	8731.94	9427.72
RND4K Q32T1	874.69	528.70
RND4K Q1T1	76.93	257.41

2.6 AS SSD Benchmark 2.0.7 performance test

※Benchmark (**Read & Write** by MB/s, default block size = **16MB**)

2.6.1 MSI M.2 NVMe SSD/ 2TB performance as below:



AS SSD Benchmark 2.0.7316.34247

File Edit View Tools Language Help

D: MSI M580 2TB 1 GB

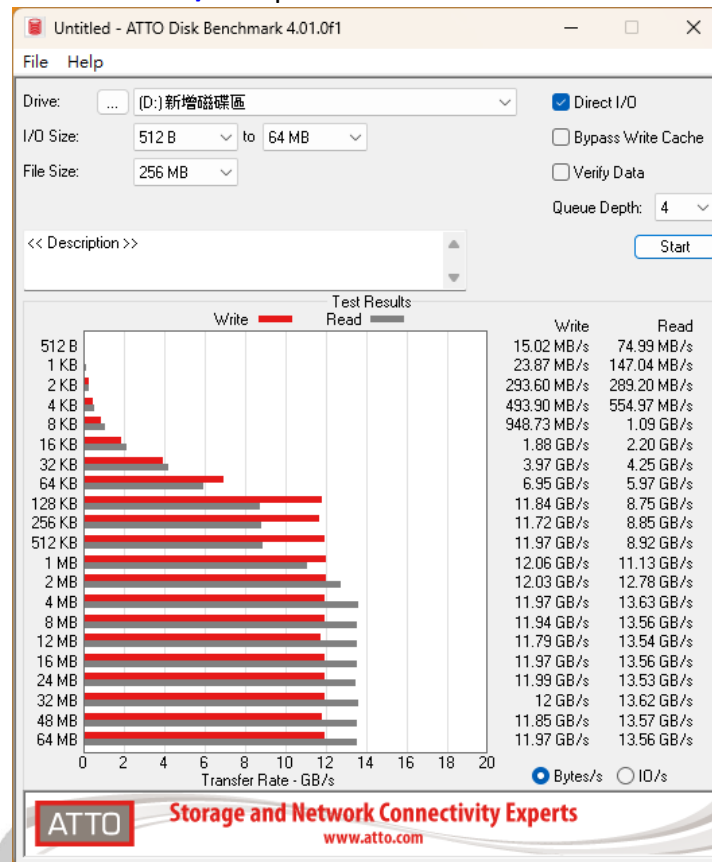
	Read:	Write:
MSI M580 2TB EQFM22.3 stornvme - OK 16384 K - OK 1863.01 GB		
☒ Seq	10661.54	8583.12 MB/s
☒ 4K	72.33 MB/s	236.15 MB/s
☒ 4K-64Thrd	3618.35 MB/s	3843.65 MB/s
☒ Acc.time	0.016 ms	0.037 ms
Score:	4757	4938
	12006	

Start Abort

EP4904 Host Bus Adapter

2.7 ATTO Disk Benchmark 4.01 performance test

2.7.1 MSI M.2 NVMe SSD/ 2TB performance as below:



2.8 AnvilBenchmark_V110_B337

2.8.1 MSI M.2 NVMe SSD/ 2TB performance as below:

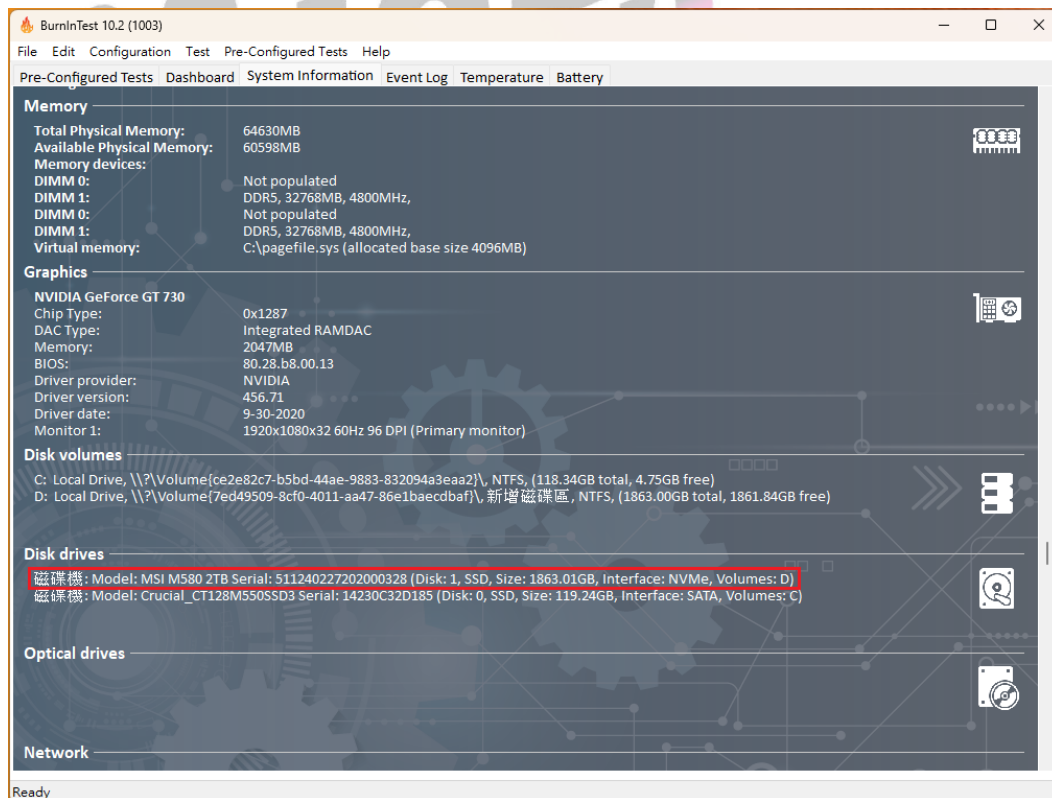
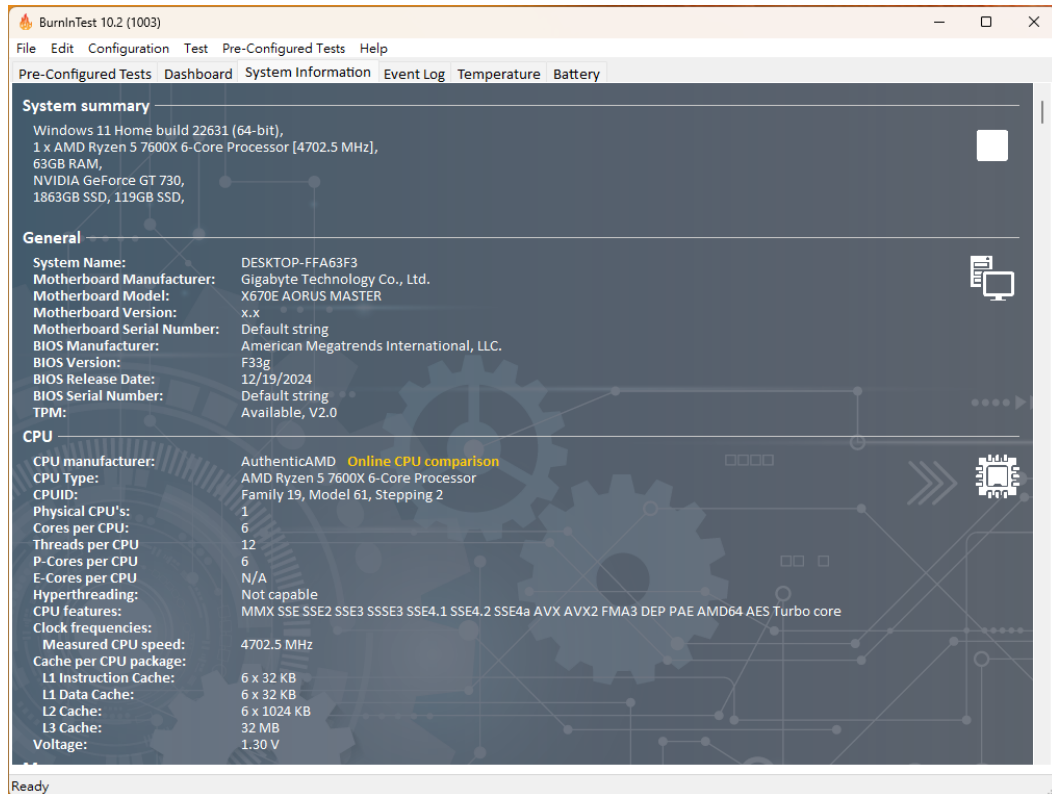


EP4904 Host Bus Adapter

3. Burn In Tests and Results

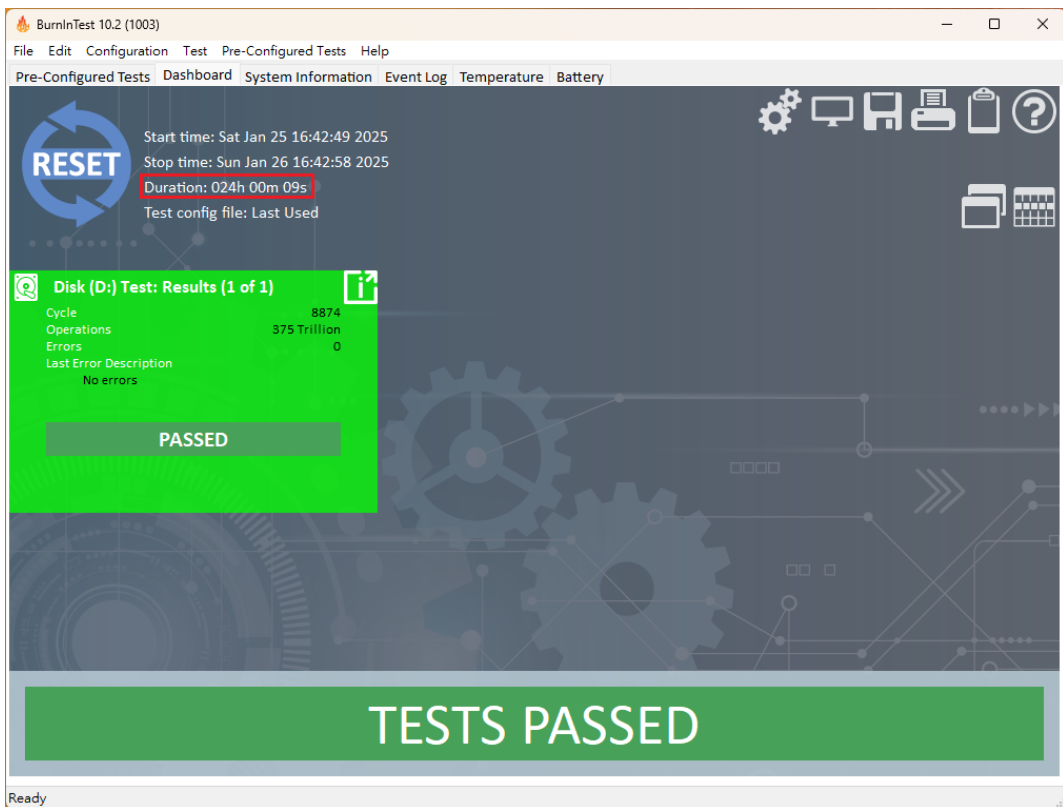
3.1 BurnInTest v10 Pro for MSI M.2 NVMe SSD/ 2TB

3.1.1 System Information as below:



EP4904 Host Bus Adapter

3.1.2 24-hour Burn-in test **PASSED**



4. Summary

- 4.1 M.2 NVMe SSD is PCIe 5.0, 32GT/s, 4 Lanes Interface, I/O speed, max. up 128Gbps.
- 4.2 EP4904 AIC I/O performance is based on M.2 NVMe SSD.
- 4.3 GE0343A adapter I/O performance is based on M.2 NVMe SSD.